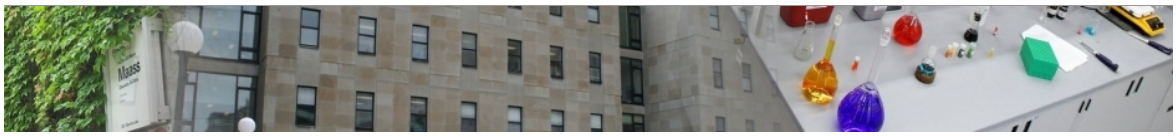

Gonzalo Cosa

Professor
Department Chair

B.Sc. (Univ. Nacional de Río Cuarto, Argentina, 1996)
Ph.D. (University of Ottawa, 2002)
Postdoctoral Fellow (University of Texas at Austin, 2002-2004)

Awards and Recognition

2024 Canada Research Chair (CRC Tier 1) in Fluorescence Imaging and Biophotonics
2022 Canadian Society of Chemistry Bernard Belleau Award for distinguished contribution to the field of medicinal chemistry through research involving biochemical or organic chemical mechanisms.
2020 The 2020 Chris S. Foote Lecture, Department of Chemistry, UCLA
2017 Fessenden Professorship
2016 - Present Member Editorial Advisory Board for the journal "ChemPhotoChem" (part of Chemistry Europe)
2015 Canadian Society of Chemistry Keith Laidler Award
2014 NSERC Discovery Accelerator Supplement, 2014 competition
2012 - 2015 Member Editorial Advisory Board for the journal "Langmuir" (American Chemical Society)
2012 Visiting Scholar, Katholieke Universiteit Leuven, Belgium
2012 American Society for Photobiology New Investigator Award
2009 - Present Associate Editor for the journal “Photochemistry and Photobiology” (American Society for Photobiology).
2009 European Society for Photobiology Young Investigator Award
2009 Inter-American Photochemical Society Young Investigator Award
2009 Tomlinson Science Award, Faculty of Science, McGill University
2008 CNC-IUPAC (Canadian National Committee for the IUPAC) Travel Award
2003 IUPAC Prize for Young Chemists awarded to the most outstanding Ph.D. Thesis in the general area of the Chemical Sciences
2003 39th IUPAC Congress Travel Grant for Young Chemists
2002 Governor General's Gold Medal to the best Ph.D. Thesis in Sciences and Engineering, University of Ottawa, Canada
1997 Asociación Química Argentina Award

Member

Member, NSERC CREATE PROMOTE
Member, Quebec Center for Applied Materials (QCAM)
Member, Centre en chimie verte et catalyse (CCVC)
Member, Research Center on Structural Biology (CRBS)

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Research Themes

- Chemical Biology
- Materials Chemistry
- Synthesis/Catalysis

Research Description

Our research centers on designing, synthesizing and using fluorescent molecular probes and on developing fluorescence microscopy methods that combined provide unprecedented detail of chemical and biologically relevant processes with unsurpassed spatial-temporal resolution and sensitivity. The hallmark of our program lies in visualizing and monitoring the motions of molecules one at a time, by tracing fluorescence emission at the single-molecule level, unraveling properties otherwise hidden in bulk ensembles. We create unique "movies" – sequences of molecular recognition and assembly processes as they lead to increasingly complex nano- and meso-scale structures. The tools utilized in our research group span from the rational design and synthesis of new fluorescent probes, to the utilization and development of state-of-the-art single molecule fluorescence microscopy techniques including single molecule fluorescence imaging and super resolution fluorescence imaging, to the assembly of highly hierarchical supramolecular systems.

Our work seeks to illuminate the mechanical workings of single macromolecules including key proteins in DNA and RNA viral genome replication, the assembly of DNA nanomaterials, and the interplay of morphology and exciton transport in conjugated polyelectrolyte-based nanomaterials. Our work also involves mapping, in real time, lipid peroxyl radicals and secondary products in living cells, providing key insights into these elusive cellular species, associated with cell homeostasis, disease, and aging.

Currently Teaching

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